

10 CHAPTER TEST

Find the number of permutations or combinations.

1. ${}_5P_2$ **20**
2. ${}_8P_3$ **336**
3. ${}_{12}P_7$ **3,991,680**
4. ${}_{17}P_{10}$ **70,572,902,400**
5. ${}_4C_3$ **4**
6. ${}_7C_7$ **1**
7. ${}_{18}C_4$ **3060**
8. ${}_9C_5$ **126**

Use the binomial theorem to write the binomial expansion. **9–12. See margin.**

9. $(x + 5)^3$
10. $(3a - 3)^5$
11. $(s + t^2)^4$
12. $(c^3 - 2d^2)^6$

A card is randomly drawn from a standard deck of 52 cards. Find the probability of drawing the given card.

13. A queen $\frac{1}{13}$
14. A red king $\frac{1}{26}$
15. A diamond $\frac{1}{4}$
16. Not a club $\frac{3}{4}$

Find the indicated probability.

17. $P(A) = 0.3$
 $P(B) = 0.6$
 $P(A \text{ or } B) = \frac{?}{?}$
 $P(A \text{ and } B) = 0.1$ **0.8**
18. $P(A) = 35\%$
 $P(B) = \frac{?}{?}$
 $P(A \text{ or } B) = 80\%$
 $P(A \text{ and } B) = 20\%$ **65%**
19. $P(A) = \frac{?}{?}$
 $P(\overline{A}) = \frac{2}{5}$ **$\frac{3}{5}$**
20. A and B are independent.
 $P(A) = 0.15$
 $P(B) = 0.6$
 $P(A \text{ and } B) = \frac{?}{?}$ **0.09**
21. A and B are dependent.
 $P(A) = 60\%$
 $P(B|A) = \frac{?}{?}$
 $P(A \text{ and } B) = 25\%$ **about 41.7%**
22. A and B are dependent.
 $P(A) = \frac{?}{?}$
 $P(B|A) = 0.4$
 $P(A \text{ and } B) = 0.36$ **0.9**

Calculate the probability of k successes for a binomial experiment consisting of n trials with probability p of success on each trial.

23. $k = 4, n = 11, p = 0.4$
about 0.236
24. $k \leq 2, n = 5, p = 0.7$
about 0.163
25. $k \geq 8, n = 9, p = 0.9$
about 0.775

26. **TRUE-OR-FALSE QUIZ** Calculate the probability of randomly guessing at least 8 correct answers on a 10 question true-or-false quiz. **about 0.055**

27. **GOVERNMENT** There are 15 members on a city council. On a recent agenda item, 8 of the council members voted in favor of a budget increase for city park improvements. How many combinations of council members could have voted in favor of the budget increase? **6435 combinations**

28. **PARACHUTING** A parachuter is attempting to land within a square in the middle of a circular landing area. The square has sides 25 feet long, and the diameter of the landing area is 40 feet. If the parachuter is equally likely to first touch the ground at any point within the landing area, what is the probability that the parachuter first touches the ground within the square?
about 0.497

29. **EDUCATION** A high school has an enrollment of 1800 students. There are 1050 females enrolled in the school. The high school has 1200 students who are involved in an after-school activity, 725 of whom are female. What is the probability that a randomly selected student at the school is a female who is not involved in an after-school activity? **about 0.18**

30. **FISHING** A study found that 9% of people cite fishing as their favorite leisure-time activity. Suppose you randomly survey 8 people about their leisure-time activities. What is the probability that at least 2 of the people cite fishing as their favorite? **about 0.158**

Additional Resources

Assessment Book

- Chapter Test, Levels A, B, C, pp. 142–147
- Standardized Chapter Test, pp. 148–149
- SAT/ACT Chapter Test, pp. 150–151
- Alternative Assessment, pp. 152–153

Test Generator CD-ROM

Chapter Test

Easily-readable reduced copies (with answers) of Chapter Test B, the Standardized Chapter Test, and the Alternative Assessment from the Assessment Book can be found on pp. 680E–680F.

9. $x^3 + 15x^2 + 75x + 125$
10. $243a^5 - 1215a^4 + 2430a^3 - 2430a^2 + 1215a - 243$
11. $s^4 + 4s^3t^2 + 6s^2t^4 + 4st^6 + t^8$
12. $c^{18} - 12c^{15}d^2 + 60c^{12}d^4 - 160c^9d^6 + 240c^6d^8 - 192c^3d^{10} + 64d^{12}$